A COMPLETE COPY OF CLAIMS 1-22

1. **(Cancelled)** A rail welderhead comprising:

two opposing pairs of quadrants constructed and arranged to close on adjacent rail sections and provide rail clamping by engagement of pads provided on the rail sections, the opposing pairs of quadrants defining a firebox therebetween; and

a shear die fully enclosed within the firebox such that, when the welderhead's opposing quadrants are in a fully closed position, the shear die, the fully sheared weld, and the weld collar are contained within the firebox.

2. **(Cancelled)** The rail welderhead of claim 1, wherein the shear die set is actuated through push rod and shaft assemblies.

3. **(Cancelled)** The rail welderhead of claim 1, wherein the adjacent rail sections are welded by flash butt rail welding.

4. **(Cancelled)** The rail welderhead of claim 1, wherein the opposing pairs of quadrants are operative to pull and stretch the adjacent rail sections.

5. **(Cancelled)** The rail welderhead of claim 1, wherein the opposing pairs of quadrants are operative to provide forging load for the adjacent rail sections, and shear die operation is performed without releasing rail tension and forging load.

6. **(Amended)** [The rail welderhead of claim 4, further comprising:]

A rail welderhead comprising:

two opposing pairs of quadrants constructed and arranged to close on adjacent rail sections and provide rail clamping by engagement of pads provided on the rail sections, the opposing pairs of quadrants defining a firebox therebetween; and

a shear die fully enclosed within the firebox such that, when the welderhead's opposing quadrants are in a fully closed position, the shear die, a fully sheared weld, and a weld collar are contained within the firebox;

wherein the opposing pairs of quadrants are operative to pull and stretch the adjacent rail sections;

said quadrants pull and stretch adjacent rail sections with a force of between about 150 to 200 tons.

7. **(Amended)**

A rail welderhead comprising:

two opposing pairs of quadrants constructed and arranged to close on adjacent rail sections and provide rail clamping by engagement of pads provided on the rail sections, the opposing pairs of quadrants defining a firebox therebetween; and

a shear die fully enclosed within the firebox such that, when the welderhead's opposing quadrants are in a fully closed position, the shear die, a fully sheared weld, and a weld collar are contained within the firebox;

wherein the opposing pairs of quadrants are operative to pull and stretch the adjacent rail sections;

[The rail welderhead of claim 7, further comprising:]

said quadrants imparting an upsetting force of between 35 to 73 tons.

8. **(Cancelled)** A method of flash butt welding of a plurality of at least first and second rails by flash butt welding the rail ends comprising:

measuring a rail gap and comparing the gap to an acceptable range of gaps and if within said acceptable range of gaps proceeding to the next step;

locating a welderhead proximate the rails;

placing the welderhead in start position on the rails and clamping the welderhead to the rails;

pulling and stretching the rails by operation of the welderhead;

making such vertical adjustments as may be required to align the rails;

performing a flash butt weld by performing a weld cycle of

(a) burning off undesirable materials from the rails;

(b) preheat each rail end to near weld temperature;

(c) flashing the ends to approach a weldable temperature;

(d) acceleration flashing to a molten, weldable state;

(e) upsetting the ends by forging & holding in a joined condition;

(f) shearing upset weld material with a shear die & retracting said shear die;

(g) post-heating said weld for improved metallurgical properties;

holding said rails under tension until cooled;

releasing and unclamping said welder head.

9. **(Cancelled)** The rail welding method of claim 8, further comprising:

said rail welderhead imparting pulling and stretching forces on said rail sections of between about 150 to 200 tons.

10. **(Cancelled)** The rail welding method of claim 8, further comprising:

said rail welderhead imparting upsetting forces on said rail sections force of between 35 to 73 tons.

11. **(Cancelled)** The rail welding method of claim 8, further comprising:

the mode of upsetting to a fixed distance or refusal and the mode of preheating (flashing,

pulsation or shorting) is selectable by an operator at a program control station;

the upsetting force for refusal being selectable from 36 to 72 tons in increments of at most one ton regardless of any rail drag or stressing forces;

upsetting force, when welding to refusal, does not vary by more than one ton.

12. **(Cancelled)** The rail welding method of claim 8, further comprising:

placing a first side of welderhead in welding position and clamping the welding machine a specific distance from the rail end.

13. **(Cancelled)** The rail welding method of claim 8, further comprising:

the welderhead itself pulling and stretching the rail until rail ends butt a welderhead automatic stop;

the machine being adapted to re-coil by relieving pressure to upset cylinders and then, determine gap, pull force and enabling a go/ no-go decision.

14. **(Cancelled)** The rail welding method of claim 8, further comprising:

in the step of moving to the start weld position a second side of the welderhead releasing and repositioning to allow a proper stroke;

re-clamping the welderhead to the rail ends.

15. **(Cancelled)** The rail welding method of claim 8, further comprising:

the mode of upsetting to a fixed distance or refusal and the mode of preheating (flashing, pulsation or shorting) is selectable by an operator at a program control station;

the upsetting force for refusal being selectable from 36 to 72 tons in increments of at most one ton regardless of any rail drag or stressing forces;

said upsetting force, when welding to refusal, does not vary by more than one ton;

the welderhead itself pulling and stretching the rail until rail ends butt a welderhead automatic

stop;

said rail welderhead imparting upsetting forces on said rail sections force of between 35 to 73 tons.

16. **(Previously Presented)** A flash butt welderhead with clamping quadrants defining a firebox therebetween comprising:

said welderhead has a rail pulling capacity sufficient for moving and stretching substantial lengths of rail to overcome tensile and frictional resistance of steel rail lengths of up to about one quarter to one third of a statute mile in length, as well as forging the rail ends together and maintaining that position after forging.

17. **(Previously Presented)** The rail welderhead of claim 16, further comprising:

said welderhead has a rail pulling capacity of 200 tons.

18. **(Amended)** The rail welderhead of claim 16, further comprising:

said welderhead having a shear die assembly movable in the firebox to shear forged material to within about one eighth inch of the parent rail contour;

the firebox being large enough that, when the welderhead is in the fully closed position, the firebox will be able to contain a [the] fully sheared weld, the shear die and a sheared weld collar [(] as embodied in flash[)];

said shearing accomplished without relaxation of the clamp cylinders.

19. **(Previously Presented)** The rail welderhead of claim 16 further comprising:

a shear die set with a sectional shape corresponding to the sectional shape of a cold rail;

said shear die set being fit loosely on the cold rail and after flash butt welding by said welderhead, said shear die is actuated through push rods whereby a single welderhead can be used for pulling and stretching rail strings and flash butt forging while the rails are under tension

said shear die operation occurring without releasing rail tension and forging load.

20. Claim 22 was erroneously numbered. Previously presented claim 20 was absent.

21. Claim 22 was erroneously numbered. Previously presented claim 21 was absent.

22. **(Previously Presented)** The rail welderhead shear die of claim 21 further comprising:

said shear die being actuated by a lever;

said lever is supported on a stay assembly and reaction rod against which the compressive force of shearing is borne, the reaction rod being mounted on an arm;

shearing force is exerted by a force actuating device acting through a pin and clevis attached to lever, the force actuating device being mounted with a trunnion mount assembly to a trunnion, such that the lever is adapted to move relative to the quadrants and the shear die acting through pushrod assemblies.